

REMARKS

Claims 1-8 and new claims 9-10 are pending. The support for the amendments and new claims are found in the published specification at: Claim 1: [0026], [0040]; Claim 4: [0030]; Claim 5: [0024]; Claim 7: [0051]; Claim 9: [0032]; Claim 10: claim 1, [0030]. No new matter is added.

Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. (Office Action, Page 2)

Claim 1 is amended to recite a 100% weight basis, based on Table 1, to clarify the basis for the ranges. This addresses the rejection of claims 1-8.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. (Office Action, Page 2)

Claim 7 is amended with proper units g/cm^3 as supported in [0051] of the published application.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. (Office Action, Page 2)

Claim 5 is clarified by adding the term "weight" which is supported in the specification in [0024].

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kihara et al.(6,627,671) in view of Matsumoto et al.(6,117,937) in view of GB-1,204,230. (Office Action, Page 3)

The rejection alleges that Kihara discloses preparations of polyurethane foams prepared from: (1) isocyanate prepolymers and polyols, (2) polyol compositions including polyols and amine curatives, and (3) water; and Kihara et al. differs from applicants' claims in that it does not particularly require employment of the polyaminochlorophenylmethane mixture (A) (hereinafter

"Mixture (A)" in the polyol composition (1) of the present invention.

The rejection alleges that since GB-'230 discloses the employment of the chlorinated amine curatives (hereinafter "Amine Mixture") in the realization of good polyurethane articles, it would have been obvious for one having ordinary skill in the art to have employed Amine Mixture of GB-'230 in the preparations of Kihara for the purpose of imparting their reaction curative effects in order to arrive at the products and processes of applicants' claims.

The rejection does not specifically address Matsumoto which is simply cited.

In response, Applicants respectfully traverse the rejection for at least the reasons set forth below.

1. The claimed invention and Kihara

The present invention is to provide a polyol composition for a two-component curable abrasive foam, which exhibits satisfactory dissolution stability, can stably yield a molded article for use as an abrasive foam in a two-component mixing casting machine and can yield a urethane foam abrasive having excellent mechanical properties as an abrasive foam and exhibiting a uniform density distribution.

In the description of [0004] of the published specification, a conventional method using a two-component mixing casting machine is introduced. One component is a isocyanate compound and another component is an conventional amine compound, 4,4'-diamino-3,3'-dichlorodiphenylmethane(MBOCA). Water is added as a foaming agent. Since water reacts with an isocyanate compound, water must be added to MBOCA before being added to the isocyanate compound. On the other hand, MBOCA must be heated to 110°C or higher so as to liquefy MBOCA to be suitable to be mixed with the isocyanate compound. Since the water kept in MBOCA at 110°C is easy to evaporate, controlling the amount of water in the mixture is difficult. As a result, the resulting foamed molded article exhibits increased density variation and lacks uniformity in density distribution.

In order to solve the problem of the conventional molding method, *the claimed invention* recites Mixture (A) which includes the *binuclear compounds, the trinuclear compounds, and tetranuclear or higher polynuclear compounds*; and the weight percents of these three group of compounds on the basis of the mixture are 50 to 70%, 20 to 40% and 5 to 10%, respectively. Mixture (A) is solid at room temperature, and is melted and becomes liquid at 80°C or lower.

As a result, water is easy to be kept in the Mixture (A) at 80 °C or lower. Therefore, the resulting foamed molded article exhibits satisfactory physical properties and *a uniform density distribution*, even if the two-component mixing casting machine is used. That is, in order to solve the problem of the conventional molding method, the approach of the claimed invention is lowering the temperature of one component in which water is added, without changing the two-component mixing casting machine.

Kihara discloses that a mixer having three charge ports is selected to mix three components including the isocyanate compound (B), the compound (C) containing a diamine compound, and water (D). Although Kihara also generally discloses that, “where a mixer having two charge ports is used, water may be added to the active hydrogen-containing compound (C), ... followed by charge into a mixer.” (Col.4, lines 40-44) However, all of the Examples 1-10 of Kihara disclose using the mixer having three charge ports. In addition, neither the problem of using a mixer having two charge ports nor how to solve it, is suggested.

In order to solve the problem of the conventional molding method as mentioned above, Kihara selects using the mixer having three charge ports instead of the conventional mixer having two charge ports. Since Kihara can keep water in the third charge port at a mild temperature independent from the component (C) containing diamino compound with higher melt point, it is easy to control the addition amount of water. That is, in order to solve the problem of the conventional molding method, the approach of Kihara is using the mixer having three charge ports, without changing the amino compound.

Facing the same problem, different approaches are disclosed by the Applicant and Kihara. The Applicant asserts that even if GB-'230 discloses the employment of Amine Mixture, it would not obvious for one having ordinary skill in the art to have employed Amine Mixture of GB-'230 in the preparations of Kihara, because Kihara has neither disclosed the problem of the conventional molding method, nor suggested to changing the amino compound. Instead, Kihara leads one having ordinary skill in the art to improve the mixer. Therefore, Kihara in fact teaches away from the claimed invention.

2. The claimed invention and GB-'230

GB-'230 discloses a amino mixture obtained from a reaction, for example, using 2-chloroaniline, aniline, sulfuric acid, aqueous formaldehyde solution. No detail of the

composition of the resulting amino mixture is disclosed. However, in the claimed invention, Mixture (A) is disclosed in detail as a composition including di-nuclear, tri-nuclear, and tetra-nuclear or poly-nuclear amino compounds at the specific range of weight percents. In addition, although *GB-'230 discloses* the method to producing polyurethane foams, *a foaming agent other than water is used. Therefore, GB-'230 has neither disclosed nor suggested the problem of the conventional molding method using water as a foaming agent*, and neither disclosed nor suggested the approach of the present invention, that is, changing the *diamino compound to an amino mixture in order to keep water at a mild temperature*, without changing the conventional mixer having two charge ports.

In light of the fact that the claimed invention is chemically different for reciting Mixture (A) which includes the binuclear compounds, the trinuclear compounds, and tetranuclear or higher polynuclear compounds; the claimed invention is clearly distinct from the combination of Kihara, Matsumoto and GB-230, it is respectfully requested that the rejection be reconsidered and withdrawn.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 04-1105.

Dated: July 2, 2009

Customer No. 21874

Respectfully submitted,

Electronic signature: /James E. Armstrong, IV/
James E. Armstrong, IV
Registration No.: 42,266
EDWARDS ANGELL PALMER & DODGE
LLP
P.O. Box 55874
Boston, Massachusetts 02205
(202) 478-7375
Attorneys/Agents For Applicant